

1 What is claimed is:

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3 1. A washing machine comprising:
4 a cabinet;
5 a tub suspended in the cabinet;
6 a drum rotatably provided in the tub;
7 a motor in the cabinet to rotate the drum;
8 a sensor assembly in the cabinet to sense a transient vibration of the tub; and
9 a control unit controlling the motor, the control unit stopping the motor if the tub is in
10 the transient vibration.

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12 2. The washing machine as claimed in claim 1, wherein the sensor assembly
13 comprises:
14 a bracket attached to an inside of the cabinet;
15 an arm hinge-coupled with the bracket wherein one end of the arm is disposed to
16 leave a predetermined distance from the tub so that the arm is contacted with the tub to rotate
17 when the tub is in the transient vibration; and
18 a sensor mounted on the arm, the sensor senses the transient vibration of the tub to
19 output a sense signal to the control unit when the arm rotates.

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21 3. The washing machine as claimed in claim 2, wherein the bracket comprises:
22 a first hole provided at a lateral side wherein a coupling member penetrating into the
23 cabinet is inserted in the first hole; and
24 a second hole provided at one end to have the arm hinge-coupled thereto.

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26 4. The washing machine as claimed in claim 3, wherein the bracket further
27 comprises a first hook protruding from the lateral side to be inserted in a second aperture of
28 the cabinet so that the bracket is temporarily fixed to the cabinet.

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30 5. The washing machine as claimed in claim 2, wherein the arm comprises:
31 a hinge shaft protruding to be fitted to the bracket; and
32 a wall body on an upper surface to have the sensor fitted thereto.

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34 6. The washing machine as claimed in claim 5, wherein the arm further
35 comprises a second hook protruding from the wall body to be caught on a top end of the
36 sensor fitted to the wall body.

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38 7. The washing machine as claimed in claim 5, wherein the arm further
39 comprises a protrusion protruding from an upper surface to catch a bottom end of the sensor
40 fitted to the wall body thereon to prevent the sensor from being separated.

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42 8. The washing machine as claimed in claim 5, wherein the sensor assembly
43 further comprises:

44 a bolt coupled with an end of the hinge shaft fitted to the bracket; and
45 a washer provided between a head of the bolt and the end of the hinge shaft.

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47 9. The washing machine as claimed in claim 2, wherein the sensor comprises:
48 a housing having a cavity inside to be mounted on the arm;

49 a transmitting unit installed at one side of the housing;
50 a ball provided in the cavity to move when the arm rotate; and
51 a receiving unit installed at the other end of the housing to confront the transmitting
52 unit and to receive a signal of the transmitting unit to output to the control unit.

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54 10. The washing machine as claimed in claim 9, wherein the housing comprises
55 a pair of separable pieces.

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57 11. The washing machine as claimed in claim 9, wherein the ball lies between
58 the transmitting unit and the receiving unit so that the receiving unit is unable to receive the
59 signal of the transmitting unit when the arm fails to rotate.

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61 12. The washing machine as claimed in claim 9, wherein a bottom inside is
62 formed concave so that the ball fails to move when the arm fails to rotate.

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64 13. The washing machine as claimed in claim 12, wherein one of the transmitting
65 and receiving units is provided to an upper side of the housing and the other one of the
66 transmitting and receiving units is provided to a lower side of the housing.

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68 14. The washing machine as claimed in claim 2, wherein the sensor further
69 comprises a third hook protruding from one side to be inserted in a third aperture provided in
70 the arm to prevent the sensor from being separated from the arm.

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72 15. The washing machine as claimed in claim 2, wherein the sensor assembly

73 further comprises an elastic member absorbing a shock transferred to the arm when the tub is
74 in the transient vibration, the elastic member returning the arm having been rotated by the tub
75 to an original position.

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77 16. The washing machine as claimed in claim 15, wherein the elastic member
78 comprises a spring having both ends engaged with the arm and the bracket, respectively.

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80 17. The washing machine as claimed in claim 2, wherein the bracket further
81 comprises a stopper protruding from an upper surface to prevent a reverse rotation of the arm.

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83 18. The washing machine as claimed in claim 17, wherein the bracket further
84 comprises a reinforcement rib protruding from the upper surface in rear of the stopper to
85 prevent the stopper from being pushed by the arm.

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87 19. A transient vibration sensor assembly of a washing machine, comprising:
88 a bracket attached to an inside of a cabinet of the washing machine;
89 an arm hinge-coupled with the bracket wherein one end of the arm is disposed to
90 leave a predetermined distance from the tub so that the arm is contacted with the tub to rotate
91 when the tub is in the transient vibration; and
92 a sensor mounted on the arm, the sensor senses the transient vibration of the tub to
93 output a sense signal to the control unit when the arm rotates.

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95 20. The transient vibration sensor assembly as claimed in claim 19, wherein the
96 bracket comprises a first hole provided at a lateral side wherein a coupling member

97 penetrating into the cabinet is inserted in the first hole, and a second hole provided at one end
98 to have the arm hinge-coupled thereto, wherein the arm comprises a hinge shaft protruding to
99 be fitted to the second hole and a wall body on an upper surface to have the sensor fitted
100 thereto, and wherein the sensor comprises a housing having a cavity inside to be mounted on
101 the arm, a transmitting unit installed at one side of the housing, a ball provided in the cavity to
102 move when the arm rotate, and a receiving unit installed at the other end of the housing to
103 confront the transmitting unit and to receive a signal of the transmitting unit to output to the
104 control unit.

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